

Montana Standards for Technology

Today's learners—teachers and students—are continually affected by a variety of digital technologies. These technologies have altered their expectations and skills. Traditional instruction alone no longer provides students with all the skills necessary to find personal value and professional success. Therefore, education needs to play an increasing role in empowering learners to be technologically literate and to integrate digital tools into their lives.

Expectations for student learning are increasing as digital tools make basic tasks easier. We must help students meet these expectations by understanding that:

- *digital technology must be in the hands of all students;*
- *technological literacy includes more than simple mastery of skills;*
- *digital citizens must use digital tools safely and responsibly;*
- *learning environments are no longer constrained by school walls; they are global and personal;*
- *digital technology skills are acquired, developed, and mastered at an individual pace;*
- *access to tools and flexible networks are critical for learner success.*

While digital technology tools can be used to facilitate assessment of student learning, the primary application of these tools must be used to support content area learning. Although integrated learning systems can be used to deliver curriculum, true technology integration involves dynamic interactions among learners using digital tools.

Inquiry-based learning activities, rich in relevant content and integrated with digital technology, can facilitate collaboration, critical thinking, creativity, and problem solving. Properly applied, technology enhances learning and instruction, but does not become the focus. By providing access to information and tools for expression, opening pathways to communication, and facilitating personal understanding, technology supports learning in all subjects.

Pursuant to Article X Sect 1(2) of the Constitution of the state of Montana and statutes §20-1-501 and §20-9-309 2(c) MCA, the implementation of these standards must incorporate the distinct and unique cultural heritage of Montana American Indians.

Technology Content Standard 1

To satisfy the requirements of Technology Content Standard 1, a student must: use digital tools and resources for problem solving and decision making.

Rationale

As personal and global problems become more complex, digital tools are powerful vehicles for data collection and analysis, collaboration, and presentation of solutions. Therefore, all learners must select and use digital tools to make sound, accurate, data-supported decisions and presentations.

Benchmarks for Technology Content Standard 1 for the end of grade 4

The benchmark for Technology Content Standard 1 for a student at the end of grade 4 is the ability to:

- identify and investigate a problem and generate possible solutions;
- collect data and information using digital tools;
- organize collected data and information using a variety of digital tools;
- identify the accuracy, diversity and point of view, including Montana American Indians, of digital information;
- share information ethically and note sources.

Benchmarks for Technology Content Standard 1 for the end of grade 8

The benchmark for Technology Content Standard 1 for a student at the end of grade 8 is the ability to:

- use multiple approaches to explore alternative solutions;
- collect relevant data and information on a subject from a variety of digital resources;
- analyze and ethically use data and information from digital resources;
- compare accuracy, diversity, relevance and point of view, including Montana American Indians, of digital information;
- share data and information ethically and appropriately cite sources.

Benchmarks for Technology Content Standard 1 upon graduation

The benchmark for Technology Content Standard 1 for a student upon graduation is the ability to:

- use multiple approaches and diverse perspectives, including Montana American Indians, to explore alternative solutions;
- collect relevant data and information on a subject from a variety of digital resources;
- select from an array of digital tools to organize and analyze data from a variety of resources;
- evaluate and synthesize data and information;
- share data and information ethically and appropriately cite sources.

Technology Content Standard 2

To satisfy the requirements of Technology Content Standard 2, a student must: collaborate and communicate globally in a digital environment.

Rationale

Digital tools can facilitate collaboration and communication by opening pathways to a global learning environment. All learners share the responsibility to practice and advocate the safe and responsible use of these digital tools.

Benchmarks for Technology Content Standard 2 for the end of grade 4

The benchmark for Technology Content Standard 2 for a student at the end of grade 4 is the ability to:

- identify and explore online collaboration and communication tools;
- identify and explore safe, legal, and responsible use of digital collaboration and communication tools;
- communicate the results of research and learning with others using digital tools;
- explore how technology has expanded the learning environment beyond the traditional classroom.

Benchmarks for Technology Content Standard 2 for the end of grade 8

The benchmark for Technology Content Standard 2 for a student at the end of grade 8 is the ability to:

- select and use online collaboration and communication tools;
- use digital collaboration and communication tools in a safe, legal, and responsible manner;
- communicate the results of research and learning with others using digital tools;
- use technology in a global learning environment.

Benchmarks for Technology Content Standard 2 upon graduation

The benchmark for Technology Content Standard 2 for a student upon graduation is the ability to:

- evaluate and apply online collaboration and communication tools to exchange ideas and information and participate in projects;
- use digital collaboration and communication tools in a safe, legal, and responsible manner and advocate for such use by others;
- synthesize and communicate the results of research and learning with others using various digital tools;
- apply technology that supports collaboration, learning and productivity in a global environment.

Technology Content Standard 3

To satisfy the requirements of Technology Content Standard 3, a student must: apply digital tools and skills with creativity and innovation to express his/herself, construct knowledge and develop products and processes.

Rationale

Digital tools can support creative and innovative expression, which is increasingly necessary in our changing world. The use of these tools can also facilitate the realization and fulfillment of one's talents and interests. The education community has the responsibility to provide access to the new avenues for creation and require nuanced understandings of digital citizenship and ownership.

Benchmarks for Technology Content Standard 3 for the end of grade 4

The benchmark for Technology Content Standard 3 for a student at the end of grade 4 is the ability to:

- use digital tools for personal expression;
- use various digital media to share information and tell stories;
- use technology to discover connections between facts;
- understand ownership of digital media;
- use digital tools and skills to construct new personal understandings.

Benchmarks for Technology Content Standard 3 for the end of grade 8

The benchmark for Technology Content Standard 3 for a student at the end of grade 8 is the ability to:

- apply a variety of digital tools for personal and group expression;
- use a variety of digital tools to create a product;
- use technology to recognize trends and possible outcomes;
- examine the relationship of copyright to ownership of digital media.
- use digital tools and skills to construct new personal understandings.

Benchmarks for Technology Content Standard 3 upon graduation

The benchmark for Technology Content Standard 3 for a student upon graduation is the ability to:

- develop projects combining multiple digital tools to suit a variety of audiences and purposes;
- evaluate and employ a variety of digital tools to effectively produce an original work;
- use models and simulations to identify trends, predict outcomes, and investigate information;
- evaluate legal protections for intellectual property and apply that understanding to personally created digital media.
- use digital tools and skills to construct new personal understandings.

Technology Content Standard 4

To satisfy the requirements of Technology Content Standard 4, a student must: possess a functional understanding of technology concepts and operations.

Rationale

Solely teaching application- and device-specific skills is no longer sufficient. While core computer skills are required to harness the power of digital tools, these skills need to be adaptable to the quickly changing technological landscape.

Benchmarks for Technology Content Standard 4 for the end of grade 4

The benchmark for Technology Content Standard 4 for a student at the end of grade 4 is the ability to:

- show skills needed to use communication, information and processing technologies;
- use appropriate terminology when communicating about current technology;
- transfer current knowledge to learning of new technology skills.

Benchmarks for Technology Content Standard 4 for the end of grade 8

The benchmark for Technology Content Standard 4 for a student at the end of grade 8 is the ability to:

- apply and refine the skills needed to use communication, information and processing technologies;
- use appropriate terminology when communicating about current technology;
- transfer current knowledge to learning of new technology skills.

Benchmarks for Technology Content Standard 4 upon graduation

The benchmark for Technology Content Standard 4 for a student upon graduation is the ability to:

- apply and refine the skills needed to use communication, information and processing technologies;
- use appropriate terminology when communicating about current technology;
- transfer current knowledge to learning of new technology skills.

Foundation Resources:

International Society for Technology in Education. *National Educational Technology Standards for Students*. 2nd Ed. Eugene, Oregon: ISTE, 2007.

Montana Office of Public Instruction. "Montana Content and Performance Standards for Technology." *Administrative Rules of Montana (10.54.7501)* Helena, Mont.: OPI, 2000.

